

OZONE DECOMPOSING CATALYST

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Classification:

- **International:** **B01D53/86; B01J23/34; B01D53/86; B01J23/16;** (IPC1-7): B01J23/34; B01D53/86

- **European:**

Application number: JP19930225978 19930910

Priority number(s): JP19930225978 19930910

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Abstract of JP7080304

PURPOSE:To obtain an ozone decomposing catalyst capable of excellently removing ozone, excellent in durability, capable of being used for a long period and which is hardly affected by humidity by using a manganese oxide or its calcination product which is reduced in weight when heated from room temp. to a specified temp. as the main component. **CONSTITUTION:**This ozone decomposing catalyst consists of the manganese oxide or its calcination product which is decreased in weight by $\geq 10\%$ with respect to the initial weight in the weight change measurement by a thermobalance when heated from room temp. to 600 deg.C. The manganese oxide or its calcination product is formed by dissolving a water-soluble manganese salt in water to obtain the 0.3 to 30wt.% aq. soln. and then blowing a gaseous mixture of O₃ and O₂ into the soln. to bring about a reaction. The obtained precipitate is washed with water until the cleaning soln. becomes neutral, and the obtained solid reactional product is dried at 10-110 deg.C for 1-50hr to obtain manganese oxide. The dried material is calcined at 500-650 deg.C for 1-10hr in the air current at 10-1000cm³/min to obtain the calcination product.

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[Cited Reference 1]

(TRANSLATION)

Japanese Patent Office

Official Laid - Open Patent Gazette

Japanese Laid - Open Patent Publication

(Kokai) No. Hei. 7 - 80304

Laid - Open Date: March 28, 1995

Application No. Hei. 5 - 225978

Application Date: September 10, 1993

Inventors: Eiji Sasaoka (phonetic) et al

Applicant: Sakai Kagaku Kogyo K.K. (phonetic)

Title of Invention: A catalyst for the decomposition of ozone

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What Is Claimed:

[Claim 1] A catalyst for the decomposition of ozone containing, as the main component, manganese oxide or the sintered article thereof having such a kind of characteristic that when the temperature is raised up to 600 °C from a room temperature, the weight is decreased by more than 10 percent on the basis of the initial weight, in a weight variation measurement according to a thermo - balance.

[Claim 2] A catalyst for the decomposition of ozone containing, as the main component, manganese oxide obtained by oxydizing a manganate aqueous solution with ozone or the sintered article thereof.
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Partial English translations of page 3:

[0012] The shape of the catalyst of the present invention is not particularly limited, for example, it is possible to use such kinds of various shapes of as, for example, a honeycomb, a pellet, a round pillar, a plate, a pipe and so on.
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Example 1:

Mn (NO₃)₂ was dissolved in water thus to prepare about 400 ml of 3 % manganese nitrate aqueous solution. Such a kind of oxygen gas that contains 3 percent by volume obtained by passing oxygen by a voiceless electric charge type ozone generator was passed into this aqueous solution at a flow rate of 80 cc / minute for a period of 40 hours. At that time, the temperature of the aqueous solution was maintained at 15 °C. The thus obtained precipitate was washed with an ion exchanging water till the washing liquid became neutral.

[0016] Next the filtering thereof was carried out and after the drying thereof was carried out at a temperature of 110 °C for a period of 25 hours, the thus obtained dried matter was sintered at a temperature of 550 °C for a period of 3 hours while circulating air (with 300 ml / minute) thus to obtain a manganese oxide powder.

Partial English translations of page 4:

(Catalyst Reaction);

The respective manganese oxide powders obtained in Examples 1 to 6 and Comparative Examples 1 to 6 (the representative particle diameter of 0.5 mm) were charged into a normal pressure circulating type charge layer reaction apparatus without carrier and the ozone decomposition was carried out under the conditions of an inlet ozone gas concentration of 235 ppm, 2.35 % of H₂O, 18.2 % of O₂, N₂ balance, SV 320, 000H⁻, 160 cm³ / minute of the total flow amount, 0.03 cm³ of catalyst charge volume and a temperature of 30 °C.

[0019] Ozone decomposition rate (%) = [inlet ozone concentration - outlet ozone concentration] x 100.